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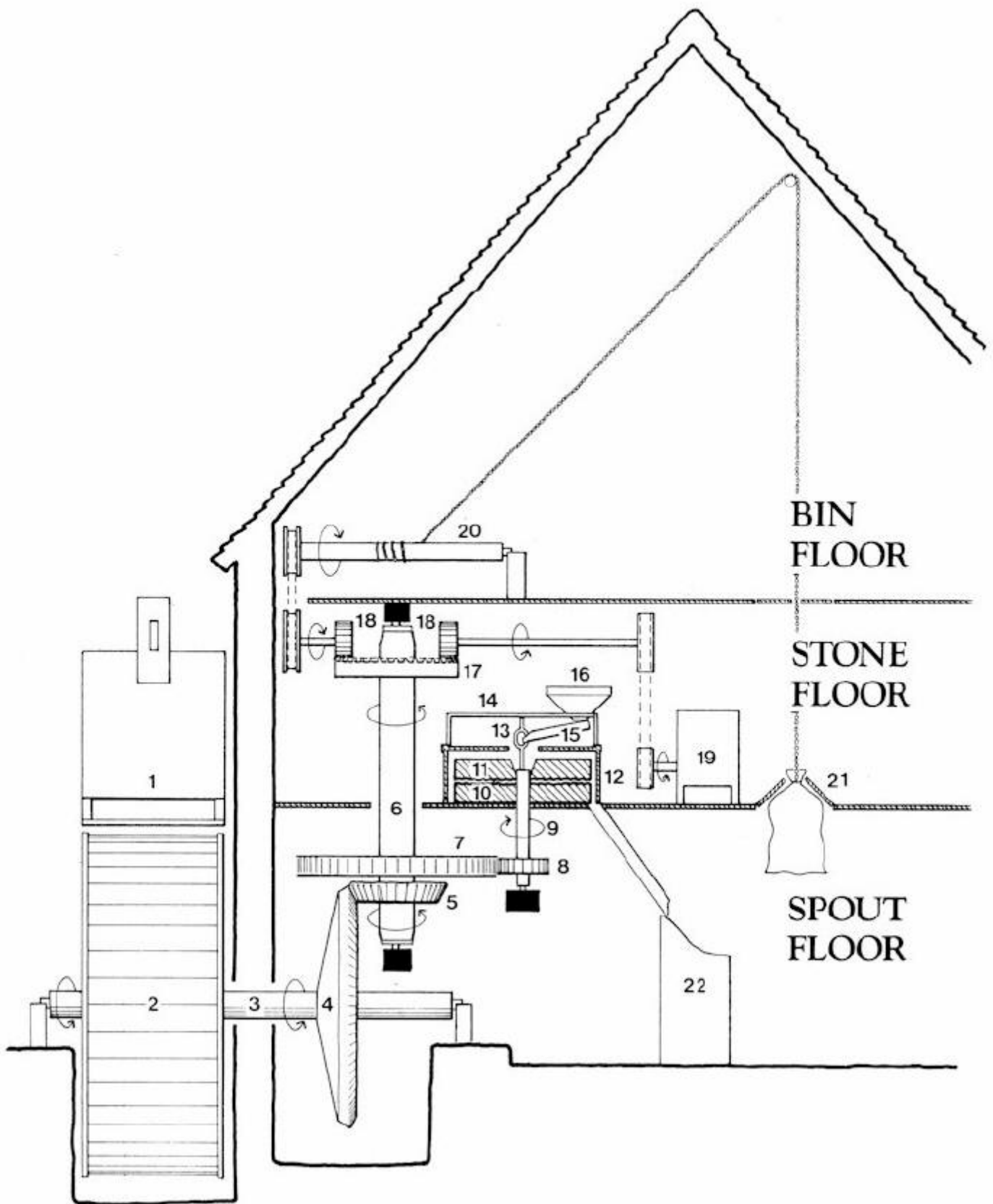
## How the Lurgashall Mill Works

The **waterwheel (2)** drives the horizontal wooden **watershaft (3)** on which is mounted the **pit wheel (4)**. This is a cast-iron bevel gear that meshes with a smaller cast-iron gear, called the **wallower (5)**, mounted on the vertical wooden **mainshaft (6)**. The gearing ratio between the watershaft and the mainshaft is about 1:3.

Above the wallower is mounted a larger wheel, the **great spur wheel (7)**, which is made entirely of wood. This meshes with the cast-iron **stone nuts (8)** (small pinions) that drive the grindstones through vertical shafts (**spindles (9)**), the gearing ratio being 1:4½. Overall, the gearing makes the stones rotate 13½ times for each rotation of the waterwheel, the average speed of the stones being 80 r.p.m..

The spindle rotates the upper stone, the **runner (11)**, above the fixed **bedstone (10)**. Grain is fed from the hopper into the **shoe (15)**, which is vibrated by the **damsel (13)**, shaking grain into the centre of the runner stone. The grinding action moves the grain outwards to the edge of the stones, and the finished product falls into the meal bins on the ground floor.

At the top of the mainshaft is a further wheel, the **crown wheel (17)**, which runs two **ancillary drives (18)**. One of these powers a **sack hoist (21)** in the top floor of the mill, a slack belt operating as a primitive clutch. The other drives a **flour (19) dresser** that separates the whole meal into bran and unbleached white flour.



1 Penstock	6 Mainshaft	11 Runner stone	16 Grain hopper	21 Sack flaps
2 Waterwheel	7 Great spur wheel	12 Tun	17 Crown wheel	22 Meal bin
3 Watershaft	8 Stone nut	13 Damsel	18 Ancillary drives	
4 Pit wheel	9 Spindle	14 Horse	19 Flour dresser	
5 Wallower	10 Bedstone	15 Shoe	20 Hoist	